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Estimating Willingness to Pay for Recreational Services of Public Parks

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ABSTRACT

The study aimed to estimate the benefits derived from the park to whole society and identify the socio-economic determinants of willingness to pay (WTP) of public park visitors. The estimated Poisson regression analysis result showed that the visit rate of the visitors was significantly predicted by their round-trip. Likewise, as per the regression analysis output result proved that various variables like income level, age, years of schooling and dummy variables perceived park quality, place of residence, sex and employment status of visitors and average stay hours in the park significantly predicted the WTP of the respondent visitors. Similarly, based on stated willingness to pay for the park entry fee, the existing fee is far below than their WTP. This evidence indicates that Tikapur Banglow Park (TBP) bestows huge benefits to the whole society. There should be comprehensive reform project to avail timely adequate park service so as to raise utility from the park.

INTRODUCTION

Public parks and open spaces other public service and facilities are vital to the day-to-day life and wellbeing of city dwellers. Indeed, urban parks and open spaces are recreational assets that help breathe life into our cities (Ben & Peter, 2009; Wang, 2015). In fact, public recreation parks are part of environmental goods and services and contribute substantially to the growth of tourism sector thereby contributing to net value addition to any society and economy as a whole. As such, urban parks offer a wide range of benefits, which are physical, psychological, aesthetic, environmental, economic, social, cultural, historical, and recreational and pursue different core values according to visitors' perceptions (Park & Sang, 2018). Furthermore, Parks also significantly improve surrounding environment by contributing to increasing greenery, reducing air, water, and noise pollution, and helping in wildlife preservation (Crompton 2005; Ahmed & Gotoh, 2006). Public Park provision is widely preferred in urban areas given that they provide different varieties of recreational activities enhancing the citizen's quality of life (Salazar & Defrancesco, 2005). In other words, public parks generate high value for human welfare, but they do not receive due consideration in public policy. Since environmental goods and services are not traded in the usual markets, the benefits derived from these commodities are external to the market (De & Devi, 2011). In other word, considerable proportion of the resource is devoted by the public authority for the construction, maintenance and operation of Public Park. Basically, the park management need to have concrete knowledge of two categories; total benefit of the park to the society and determinants of visitor's willingness

to pay for park service. This would rationalize the allocation of scarce resource for the park operation and its quality upgrade. Therefore, it is essential to estimate to total benefits of the park service and identify socio-economic determinants of park visitors that effects their WTP for park recreational service. The study is grounded in the microeconomic theory of consumer behaviour which states that an individual consumer maximizes his/her utility derived from the consumption of goods and services subject to his/her budget constraints. There are basically two methods of the valuation of the environmental goods: the market-based approach and the non-market-based approach. When a market exists, it is relatively easy to apply market-based techniques to measure value. But when market information relating to price and quantities is not available to estimate the value of the resources or resources service, we use non market valuation methods. Boardman, Greenberg, Vining and Weimer (2006) further stated that valuation based on observed behavior is important because individuals reveal their preferences without having to be asked. This approach therefore minimizes bias associated with studies of this nature. Therefore, revealed preference is a way to infer the preferences of individuals given the observed choices. It contrasts with attempts to directly measure preferences or utility through stated preferences. In other words, revealed preference theory advocates that it is not what you say, it is what you do that reveals what you want (Pearce, Atkinson & Mourato, 2006). The researcher made choice of Individual Travel Cost Method (ITCM) to estimate round trip total travel cost the visitors incur to access the park recreational service. In this context, the study site of this study was Tikapur

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Park which is popularly called Tikapur Banglow Park (TBP). It is located at the bank of Karnali River in Kailali district of Far Western Province of Federal Democratic Republic of Nepal. The TBP is spread along the surface area of more than 58.0243 Hectares of Land (Tikapur Municipality, 2016). The main thrust of this study was to identify socio-economic factors associated with the park visitors that affects their visit rates and willingness to pay to access the park service. Therefore, this study tried answer basically two questions such as how much benefits does the Tikapur park bestows the society and what are factors that are associated with WTP of visitors to access the park service. This knowledge can be concrete basis for resource allocation decision for park management to upgrade quality standard of the park service.

LITERATURE REVIEW

Economic thinkers developed the concept of non-market valuation techniques since 1940s. Thereafter, several researches have been carried out across the world regarding benefits of recreational sites such as public parks and green spaces, their effect on land and property values, social activities, and even people's attitude to quality of life (Anderson & West, 2006; Colwell, 1985; Coughlin, Hammer & Horn, 1974; Hannon, 1994). Public Park is better option as recreation center and obviously will contribute to reduce the incidence of juvenile delinquency (Crompton, 2001). Public parks as representative of urban green areas have played tremendous important role to conserve urban environment while keeping the rapid pace of urban growth. However, development, maintenance and preservation of the quality of public park service are tough issues faced by many city governments and communities (Iamtrakul, Teknomo & Hokao, 2005). Zella and Ngonyali (2016) employed Travel Cost Method to value recreation Kilimanjaro National Park. Based on the econometric results, Consumer Surplus per day of stay in the park was US\$ 571.10, the mean visitor Willingness to Pay was per one day of a visit is US\$ 516.84, the total recreation value of the park was estimated to be US\$ 193 929 602 per one calendar year and the revenue maximizing entry fee for the park was estimated to be US\$ 55.8.

Michelle, Loomis and Bilmes (2016) estimated value of national park service as US\$92 billion, of which US\$62 billion was for National Parks and US\$30 billion for National Park Service (NPS) Programs which often exist beyond the geographical boundaries of NPS units. Wang (2015) stated that urban Public Park, open and green spaces are important health promoting facilities, with an increasingly critical role in contributing to the sustainable future of our cities.

El-bekkey, Abedellatif and Faïçal (2013) estimated the consumer surplus per person per visit is US\$ 65.36 using individual travel cost method. In parallel, the willingness to pay (WTP) for the improvement of services, contingent Valuation Method (CVM), the WTP was estimated by the bid curve US\$ 6.20. The results show that the value of recreation-based on TCM is higher than the one

generated by the CVM.

Roussel and Tardieu (2012) found mean consumer surplus US \$ 78.03 per visitor and per trip. De and Devi (2011) estimated consumer surplus per domestic tourist per visit per trip IRs. 1787.46. The same for the foreign tourist is about IRs 15872. The revised consumer surpluses based on the additional willingness to pay are IRs. 1933.15 and IRs. 17292 i.e., there is an incremental consumer surplus IR. 145.69 and IRs. 1420 respectively for Cherrapunjee of India. Nde (2011) estimated consumer surplus equivalent to the recreational value of the beach per trip per visitor per day which ranged from €2.56 to €41.51 for Ngoe Beach in Kribi, Cameroon. Also, a possible access fee to the beach of €2.0 was suggested based on the stated willingness to pay of the visitors.

Adams, da Motta, Ortiz, Reid, Aznar, and de Almeida Sinisgalli (2008) found that population is willing to pay US\$ 2,113,548.00 per year for the conservation of the MDSP (use and existence values), or US\$ 60.39 ha per year. The results indicate that the preservation value is strongly associated to the population's ability to pay, increasing with income levels.

Aryal (2008) found the total annual consumer surplus or economic benefit obtained from recreation in the park approximately NPR 23 million (US\$ 34, 21,162.7) for Chitawan National Park of Chitawan of Nepal. Based on willingness to pay, the study recommended that a Park entrance fee of US\$ 15 per person be introduced, which could be utilized for Park management. Ahmed and Gotoh (2006) showed that the residents of the Nagasaki City of Japan are willing to pay in total 920 million yen (5,225 yen per household) for preserving the public parks in the city. The negative relationship between the persons visiting the public parks and the WTP, revealed from the multivariate analysis indicates that, non-use value of public parks in Nagasaki City is also very high. Himayatullaha and Siddiqui (2003) found the annual monetary recreational value of the Ayubia National Park of Pakistan about PKR 200 million. In addition, the total recreational value was also projected in a new scenario that amounted to PKR 209 million. The total actual consumer surplus was estimated to be PKR 24.2 million. The annual consumer surplus in case of an improved scenario was projected as PKR 35.01 million. The brief details of review of literature presented above mostly belong to global context. Hence, this type of study is in its infancy stage Nepalese context. There is dearth of such literature on estimation of economic benefits of public parks and socio-economic determinants of willingness to pay for park recreational service in the Nepalese context. Therefore, study is expected to fulfill such gap.

METHODOLOGY

The study site was Tikapur Park which is popularly called Tikapur Banglow Park (TBP). It is located at the bank of Karnali River in Kailali district of Sudurpaschim Province of Federal Democratic Republic of Nepal. The TBP is spread along the surface area of more than 58.0243

Hectares of Land (Tikapur Municipality, 2016). The relevant data were collected from TBP recreational site visitors using survey technique. This study has considered the individual visitors as source of information on choice of visit and their spending preference to enjoy the park recreational service. Therefore, the population of the study was all the visitors who visited the park during February 2018 AD to January 2019 AD which was impossible to estimate exactly. Hence, the desired sample size was then calculated following Godden (2004) formula for determining sample size on infinite population. The formula specified as:

$$SS = \frac{Z^2(p)(1-p)}{M^2} \dots\dots\dots (1)$$

Where, SS, p and M denote sample size for infinite population, population proportion {(assumed to be 0.5 (50%) since this would provide the required sample size} and margin of error {at 5% (0.05)}. Likewise, Z implies Z value (1.96 for 95% confidence level). Therefore, this estimation calculated the sample size of 384. Based on this, 384 visitors were surveyed to collect information as per the objectives of the study. The structured questionnaire mainly concentrated on the collection of relevant cross sectional. This study is basically based on non-market valuation technique to estimate benefits derived from public recreational sites. Therefore, it uses

Table 1: Operational definition of variables in the dataset

Acronyms of Variables	Operational Definition
V_{ij}	Visit rate of respondent visitor in the park.
RTTC	Round Trip Travel Cost to visit park to home of respondent
HHMI	Monthly Household Income of Respondent
Age	Age of Respondent
YrsSch	Years of schooling of Respondents
HHs	Household size of Respondents
SRTTC	Substitute Park Round Trip Travel Cost
AvHrsStay	Average hours of stay in the park by respondent visitors
Dum1_Gen	Dummy variable 1 i.e. 1 if respondent is Male, 0 if Respondent is Female
Dum 2_Pr	Dummy variable 2 i.e. 1 if respondent is Urban Dweller, 0 if Respondent is Village Dweller.
Dum 3_PQ	Dummy variable 3 i.e. 1 if respondent visitors' perception on Quality of Park is good 0 otherwise
WTP	Willingness to Pay
SWTP	Stated Willingness to Pay

Note: This table demonstrates the Acronyms of variable and their operational definitions

Estimation Technique of Economic Benefits and Consumer Surplus

This study is basically based on non-market valuation technique to estimate benefits derived from public recreational sites. Individual Travel Cost Method (ITCM) which falls under revealed preference method was used to estimate willingness to pay and consumers' surplus. The functional specification of the ITCM is:

$$V = f(TC, X_i) \dots\dots\dots (2)$$

the cost of traveling to a recreational site in order to infer recreational benefits provided by the site, the effect of explanatory variable on WTP to visit the area was studied through the use of Regression Model. According to Pearce and Moran (1994) the total economic value consists of different values which can be seen in equation: Total economic value = Direct use value + Existence value + Bequest value + Indirect use value + Option value. The direct use value would be the perceived recreational gain by the visitors of the park. The existence value of Tikapur Park be the value that create face value of city due to the existence of the park. The bequest is a value that represents the future use of Park for future generations. The indirect use value could in the case of Tikapur Park be the shelter that it gives to all life in the park, whereas option value is a value that compares current benefits of the park with future benefits. Therefore, this study aims to estimate direct use value using Individual Travel Cost Method (ITCM) which falls under revealed preference method that is expected to estimate willingness to pay and consumers' surplus.

Operational Definition of Variables

The operationalizing the variables and making them clear and specific is key arrive logical and meaningful is conclusion corner stone of any research. The detail of operationalization is given in table 1.

Where V is visit rate to the site, TC is visit costs and X_i represents other socio-economic variables which are hypothesized to explain visits to the site due to individual differences. Therefore, The econometric specification of the model for the trip generating function of an ITCM as:

$$V_{ij} = X_i'\beta + \varepsilon_i \dots\dots\dots (3)$$

Where, V_{ij} is individual i's visit to site j, X_i is a vectors of explanatory variables viz, household monthly

income, round trip travel cost, age of respondent visitor, household size of respondent visitor, years of schooling of respondent visitor, round trip travel cost of substitute park, place of residence(urban/rural) of respondent visitors, sex of respondent visitors, perceived park quality by respondent visitors and β is parameter of vectors of explanatory variables to be estimated and $\hat{\epsilon}_i$ is the estimated residual term. Average Consumer Surplus per visitors per visit = $(-1)/\beta$ (4)

Where, β = Coefficient for Total travel cost estimated in the model.

Willingness to Pay (WTP)

Urban parks confer varieties of economic benefits to the societies. Direct use benefit is one of them. Several studies have identified WTP as a proxy of direct use value. The round trip travel cost has been applied as surrogate for estimation of direct use value of recreational park or any other recreational place by researchers. The Travel Cost Method (TCM) is applied for estimation of economic use value of places where visitors use for recreation. The rationale of the method is that, the time and costs which people are suffered to visit a recreational site, indicates its recreational value. According the method, it is assumed that, the recreational value of a place, reflects the people's WTP to visit it (Amirnejad et al., 2011). In this method, the preferences of individuals associated with environmental utility are specified through calculating the time and money that the visitors cost to visit a place (Amirnejad et al., 2011). In other words, round trip travel cost enables us to assess individual's preferences for the consumption of non-market goods. Therefore, we have to use the cost of traveling to a recreation site as WTP in order to infer recreational benefits provided by the site. Hence, dependent variable is round trip travel cost and explanatory variables are other socio economics characteristics. The Regression Model can be presented as follows:

$$WTP_{ij} = f(HH_{mi}, X_i) + \epsilon \quad \dots\dots\dots(5)$$

Where, WTP_{ij} is round trip travel cost of individual i visitor to visit site j, HH_{mi} is household monthly income of individual visitor and X_i is a vectors of explanatory variables viz, household monthly income, age of respondent visitor, household size of respondent visitor, years of schooling of respondent visitor, round trip travel cost of substitute park, gender of respondent visitor, place of residence(urban/rural) of respondent, perceived park quality and adequacy of park service. Finally, ϵ stands for error term.

$$WTP_{ij} = X_i' \alpha + \hat{\epsilon}_i \dots\dots\dots(6)$$

Where, WTP_{ij} is round trip total travel cost individual visitor i to visit site j, X_i is a vectors of explanatory variables viz, household monthly income, age of respondent visitor, household size of respondent visitor, years of schooling of respondent visitor, round trip travel cost of substitute park, place of residence(urban/

rural) of respondent visitors, sex of respondent visitors, perceived park quality by respondent visitors, adequacy of park service and α is parameter of vectors of explanatory variables to be estimated and $\hat{\epsilon}$ is the estimated residual term.

EMPIRICAL RESULT AND DISCUSSION

Socio and Demographic Characteristics Of Sample Respondent

The data in table 2 exhibits the fact of descriptive statistics of the sample respondents. The average age of respondents is 27.87 years whereas average household size is 5.98. About 59.4 percent of the respondents were male. Likewise, 70.60 percent visitors are urban dwellers and remaining 29.40 percent are village dwellers. Regarding level of educational, 36.7 percent are secondary graduates, followed by 32.60 percent bachelor, 19.80 percent basic and primary, 6.30 masters and above, 4.20 percent just literate and 0.5 percent illiterate. The data also shows that of total visitors, 36.70 were students, followed by 26.30 percent were self-employed, 21.10 percent are formally employed, 13.80 percent unemployed, 1.30 percent daily wage earner and 1.30 percent retired (Table 2).

Perception of Park Visitors on Park Service

Perception of individual visitor towards exiting service is subjective phenomenon and definitely differ person to person based on their taste and preference. Keeping this fact in view, the park visitors were asked different questions on the common dimensions of existing park attributes like physical condition, picnic spot, pleasant environmental, entertainment provision, security condition and park staff treatment towards visitors. The park visitors were requested to respond on Likert Scale from strongly agree to strongly disagree. There was score 5, 4, 3, 2 and 1 for strongly agree, agree, undecided, disagree and strongly disagree respectively. Thus, the mean value would range between 1 to 5. Higher the mean value implies better the condition and vice versa. Regarding existing physical condition of the park, mean value is 2.48 meaning that there is substantial space to improve it. The mean value for picnic spot is 3.46 relatively better than first one. In nutshell, if we consider half of full score 2.5 as cut off score as bench mark for perceived better position, then still two dimensions are below the bench mark. Based on mean value given below, there is big space to increase park quality standard to increase welfare of park visitors (Table 3).

Descriptive Statistics

The data given in table 4 shows that mean visitation rate is 2.62 per year per visitor. The visitors mean RTTC, SRITC and mean monthly household income are NPR 965, NPR 214 and NPR.14283 respectively. Likewise, visitors mean years of schooling are 11.31 years. Average stay hour is found to be about 3.97 hours. Similarly, visitors' maximum Stated Willingness to Pay (SWTP) is about NPR 38.

Table 2: Socio- Demographic Characteristics of Respondents

Mean Age (In Years) (n =384)	27.87
Household Size (n =384)	5.98
Gender (n =384)	
Male	59.40 %
Female	40.60 %
Place of Residence(n =384)	
Urban Dweller	76.60 %
Village Dweller	29.40 %
Educational Status(n =384)	
Illiterate	0.50 %
Literate	4.20 %
Basic and Primary	19.80 %
Secondary Level	36.70 %
Bachelor	32.60 %
Masters and Above	6.30 %
Employment Status(n =384)	
Student	36.70 %
Formally Employed	21.10 %
Unemployed	13.80 %
Retired	0.80 %
Self-employed	26.30 %
Daily Wage	1.30 %
Willingness to Accept higher entry fee to improve park quality(n =384)	
Yes	82.00 %
No	18.00 %

Note: This table shows various socio-demographic characteristics of sampled respondents in percentages

Table 3: Perception of Park Visitors on Tikapur Park Service

Statement on Park facility	N	Min	Max	Mean	Standard Deviation
Physical condition of park is good	384	1	5	2.48	1.023
Park picnic spot is good in aggregate	384	1	5	3.46	1.058
Park environment is pleasant	384	1	5	2.092	0.591
Entertainment Provision of Park is adequate	384	2	5	2.814	0.953
There is good security in park for visitors	384	2	5	3.296	0.964
Park staff treatment and attitude towards the park visitors is hospitable and polite	384	2	5	2.611	0.979

Note: This table demonstrates Likert Scale Measurements with mean and standard deviation of the data

Table 4: Descriptive Statistics of Key Variables

Variables	Mean	Minimum	Maximum	Standard Deviation
Visit Rate (V_{ij})	2.62	1.00	15.00	2.15
RTTC (in NPR)	964.51	25.00	5725.00	912.81
HHmi (in NPR)	14282.55	1500.00	55000.00	8443.73
HHs	5.98	2.00	18.00	2.58
YrSch (in Years)	11.31	.00	17.00	3.84
Age (in Years)	27.89	16	70	9.96
Average Stay hours in Park	3.97	1.00	10.00	1.86
SRTTC (in NPR)	213.80	.00	2000.00	144.42
SWTP as entry fee (in Rs.)	38.04	.00	150	6.17
Total Number of Sample Respondents	384			

Note: Descriptive statistics-mean, minimum, maximum and standard deviation are calculated by researcher based on data of field survey 2018/019.

Test Statistics of the Key Variables

The variables were included on the logic of underlying economic theory. The included variables were tested for multicollinearity. According to Loomis and Walsh (1997), an absolute value of 0.8 (except principal diagonal) signifies multicollinearity. The correlation matrix displayed in Table 5 shows no correlation higher than 0.61, which is quite lower than 0.8 indicate that multicollinearity is not a problem within our data set. All the variables could initially be included in the analysis.

Estimation of Benefits and Consumer Surplus

The following table shows that estimated result of Poisson regression model to calculate consumer surplus and benefit of the park. Based on estimated result of Poisson model given in table 6, it is clear that F-test to test the goodness of fit was performed at 5 percent significant level and the calculated F-value is 37.28 and the test rejects the null hypothesis and accepts alternate hypothesis. The R^2 coefficient explains to what extent the included variables can explain the variation in the number of visits made. The calculated value of R^2 and adjusted

R^2 are 0.51 and 0.50 respectively which are comparatively better in the context of behavioral economics. In general, this value can be seen as a low value, and this would imply that the relationship between the number of trips made to the park and the included variables is relatively stronger

Regression Equation Can be Written as:

$$V_{ij} = 0.467 - 0.00028 (RTTC) + 0.00003 (HHmi) - 0.0076 (Age) + 0.01457 (YrSch) - 0.0423 (HHs) - 0.00021 (SRTTC) + 0.843 (Dum1 Sex) + 0.157 (Dum2 Pr) + 0.3405 (Dum3 PQ) + \epsilon \dots\dots\dots(7)$$

Calculation of Consumer Surplus

According to Tikapur Municipality record, the total annual park visit in the Fiscal Year 2018 A D is 2,11,517. As described above in the methodology section the individual average consumer surplus could, according to Garrod and Willis (1999), be calculated as in equation (8). Consumer surplus = $-1 / \text{Coefficient for RTT}$ (8)

Applying the results in this model gave: $-1 / -0.00028 = 3571 \dots\dots\dots(9)$

Aggregated consumer surplus = Total Annual Park Visit * 3571 (10)

Table 5: Correlation Matrix of Variables

Variables	V_{ij}	RTTC	HHmi	Age	Yrs	HHs	SRTTC	AvStyHr
V_{ij}	1	-0.30	0.61	-0.14	0.19	-0.14	0.07	0.04
RTTC	-0.30	1	-0.19	0.07	-0.01	-0.04	0.24	-0.18
HHmi	0.61	-0.19	1	-0.08	0.25	-0.05	0.07	0.05
Age	-0.14	0.07	-0.08	1	-0.15	0.01	0.03	0.06
YrSch	0.19	-0.01	0.25	-0.15	1	-0.07	0.13	-0.03
HHs	-0.14	-0.04	-0.05	0.01	-0.07	1	0.06	0.05
SRTTC	0.07	0.24	0.07	0.03	0.13	0.06	1	-0.01
AvStyHr	0.04	-0.18	0.05	0.06	-0.03	0.05	-0.01	1

Note: The table shows that the correlation matrix of various variables.

Table 6: Estimated Results of Poisson Regression Model

Dependent Variable; V_{ij} (Visit Rate)				
Variables	Coefficients	Std Error	z-Statistics	Prob.
Constant	0.467	0.206	2.265	0.02
RTTC	-0.00028	0.00005	-5.7038	0.00
HHmi	0.00003	0.000	10.176	0.00
Age	-0.0076	0.0036	-2.079	0.04
HHs	-0.0423	0.0141	-2.989753	
	0.00			
YrSch	0.01457	0.0091	1.6068	
	0.10			
SRTTC	0.00021	0.000090	2.444128	0.01
D1 Sex	0.0843	0.03321	2.5372	0.01
D2 PR	0.157	0.0784	2.0017	0.04
D3 PQ	0.3405	0.0967	3.518	0.00
R^2 0.51, Adjusted R^2 0.50, F Statistics 37.28, Akaike info criterion 3.28				
Schwarz criterion 3.39, Darwin-Watson 1.88, LR statisti 295.026				
Prob (LR Statistics) 0.000				

Note: This table shows the calculation of Poisson regression model output result.

Now, Aggregated Consumers Surplus = $2,11,517 * 3571$
 $= \text{NPR}755327207$ (11)

The aggregated consumer surplus for the TBP was calculated to be NPR755.32 million as seen in equation (11). However, this result is temporal and dynamics. Similarly, this value seems high, and a probable cause for the high consumer surplus could be the low travel cost coefficient.

Willingness to Pay (WTP) for Park Recreational Service

TBP confers varieties of economic benefits to the societies. Direct use benefit is one of them. Several studies have identified WTP as a proxy of direct use value. The round trip travel cost has been applied for estimation of direct use value of recreational park or any other recreational place by researchers. The rationale of the method is that, the time and costs which people are suffered to visit a place, indicates its recreational value. According the method, it is assumed that, the recreational value of a place, reflects the people's WTP to visit it. In this method, the preferences of individuals associated with environmental utility are specified through calculating the time and money that the visitors cost to visit a place (Amirnejad and Ataei Solout, 2011).

Based on OLS regression model output result, the calculated value of R^2 and adjusted R^2 are 0.33 and 0.31 respectively which are comparatively satisfactory in the context of behavioral economics. In general, this value can be seen as a low value, and this would imply that the relationship between the WTP for the TBP Park service and the included variables is relatively strong. These values may be weak for other natural sciences to assess the fitting of the model. But for human and behavioral sciences these values are sufficient enough

to infer that there is goodness of fit of the model. However, we have to identify other factors determining WTP. Darwin-Watson is the test of autocorrelation and its calculated value is D-W is 1.888 which is close to 2. It means the residuals are not auto-correlated. In the model, explanatory variables like, travel cost, household monthly income, age, household size, years of schooling, substitute site travel cost, dummy variables like gender, place of residence, park quality are found statistically significant (Table 7).

Based on the result of model estimation given above regression Equation can be written as:

$$\text{WTP} = 1162 + 0.011 (\text{HHmi}) - 3.6 (\text{Age}) - 0.0423 (\text{HHs}) + 11.31 (\text{YrsSch}) + 0.6 (\text{SRTTC}) - 91.17 (\text{AvStyHrs}) + 132.57 (\text{Dum1 Gen}) - 76.26 (\text{Dum2 Pr}) - 74.59 (\text{Dum3 PQ}) - 78.79 (\text{Dum4 Emp}) + 811.70 (\text{D5 APS}) + \epsilon \dots\dots\dots (12)$$

Based on the result given in Table 7, it can be inferred that, there is significant relationship between willingness to pay (WTP) to enjoy recreation service of TBP and included explanatory variables i.e.; HHmi, age, years of schooling, SRTTC, average stay hours, gender of visitor, place of residence of visitor, employment status of visitor, perceived adequacy of park service. Alternatively, slope coefficients are not equal to zero.

Additional Revenue Stream Generation

The visitors were asked dichotomous question whether they are ready to accept higher entry fee for upgrading park quality. The vast majority (82%) of the visitors responded their readiness to pay higher entry fee to improve existing park quality condition. Likewise, they were asked to open bid their Stated Willingness to Pay (SWTP) as entry fee to access park service if the park quality would be upgraded. The mean value of their stated WTP was NPR 38 which

Table 7: Estimated Results of OLS Model

Dependent Variable: Round Trip Travel cost as a proxy of WTP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1161.9	244.63	4.75	0.00
HHMI	0.011	0.004	-2.56	0.01
AGE	3.6	4.20	0.85	0.40
HHs	-30.0	15.14	-1.98	0.05
YRSch	11.3	10.77	1.05	0.29
SRTTC	0.6	0.12	4.64	0.00
AvStayHrs	-91.2	21.40	-4.26	0.00
D1Gen	132.6	57.46	-2.31	0.02
D2PR	-76.3	89.20	-0.85	0.39
D3PQ	-74.6	100.96	-0.74	0.46
D4EMP	-78.8	85.03	-0.93	0.35
D5AdqPRK_SERVICE	811.7	83.34	9.74	0.00
R^2 0.33 and Adjusted R^2 0.31				
Darwin-Watson	1.85			
F Statistics	16.75			
Prob(F- Statistics)	0.000			

Note: This table shows the calculation of OLS regression model output result.

is NPR 18 over its current entry fee. Based on this, we can estimate additional revenue generation by multiplying Rs. 18 with annual park visit which is calculated to be NPR 3.8 million (approx.) that is substantial amount for improvement for existing condition. The calculation procedure as follows:

Additional Revenue = (SWTP as entry fee - current entry fee) * Annual Park Visit

Additional Revenue = (NPR38 - 20) * 2,11,517 = NPR 38,07,306

CONCLUSION

Public recreational parks are essential parts of modern smart human settlements as they bestow verities of benefits to human society and so does TBP. TBP as a public recreational park provides different arrays of utilities to the people of surrounding area and nation as whole. It has generated varieties of economic benefits to the society. The estimated regression analysis result showed that the visit rate of the visitors was significantly predicted by their round-trip travel cost, household income, age, years of schooling, substitute site round trip travel cost and dummy variables sex, place of residence and perceived park quality. The data analysis infers that further away the residence of the visitors, lesser the visit rate and vice versa. Likewise, income level, age, years of schooling, household size, substitute site travel cost, gender, place of residence, park quality, average stay hours in the park significantly predicted the WTP of the respondent visitors. Based on stated willingness to pay for the park entry fee, the existing fee is far below than their WTP. The annual economic benefit of the park was estimated to be NPR 755.32 million based on calculation of consumer surplus. This evidence clearly indicates that TBP bestows huge benefits to society.

Public recreational parks are public goods that renders recreational benefits to whole society. Management authority public goods need to identify fair fee level based on cost recovery that will ensure at least break point. Therefore, optimal pricing strategy based on visitors WTP to access recreational site to maintain park quality is rule of thumb for the park authority. This study has opened the door for this purpose. Based on the visitor survey data, the current entry fee can be reviewed to raise the fee as per SWTP of visitors of the park that could generate NPR 3.8 million annually. Besides, TBP has contributed significantly to net value addition of the surrounding areas and economy as a whole.

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REFERENCES

Ahmed, S.U., & Gotoh,E., (2006). *Estimation of the Willingness to Pay for preserving Public Parks in Nagasaki*

City by Using Contingent Valuation Method. Nagasaki University Japan.

- Adams, C., da Motta, R. S., Ortiz, R. A., Reid, J., Aznar, C. E., & de Almeida Sinisgalli, P. A. (2008). The use of contingent valuation for evaluating protected areas in the developing world: Economic valuation of Morro do Diabo State Park, Atlantic Rainforest, São Paulo State (Brazil). *Ecological Economics*, 66(2-3), 359-370.
- Anderson, S. T. & West, S. E. (2006). Open space, residential property values, and spatial context. *Regional Science and Urban Economics*, 36, 773-789.
- Aryal, M. R. (2008). *Cost-Benefit Analysis of Buffer Zone Management in Chitawan National Park of Chitawan, Nepal*. Institute of Agriculture and Animal Sciences.
- Boardman, A.E., Greenberg, D.H., Vining, A.R. & Weimer, D.L. (2006). *Cost-benefit analysis: concepts and practice (3rd ed.)*, Pearson Prentice Hall.
- Brown, G. (2008) A Theory of Urban Park Geography. *Journal of Leisure Research*, 40(4), 589-607. DOI: 10.1080/00222216.2008.11950154
- Cameron, A.C. & Trivedi., P.K. (1990). Regression-based test for dispersion in the Poisson model. *Journal of Econometrics*, 46 (3), 347-364.
- Crompton, J.L. (2005) The impact of parks on property values: empirical evidence from the past two decades in the United States. *Managing Leisure*, 10(4), 203-218. DOI:10.1080/13606710500348060
- Crompton, J. L. (2001). The impact of parks on property values: A review of the empirical evidence. *Journal of leisure research*, 33(1), 1-31.
- Colwell, P. F., Gujral, S.S., & Coley, C. (1985). The impact of a shopping center on the value of surrounding properties. *Real Estate Issues*, 10, 35-9.
- Coughlin, R., Hammer, T. & Horn, E. (1974). The Effect of a Large Urban Park on Real Estate Value. *Journal of the American Planning Association*, 40, 274- 277.
- De, U. K. & Devi, A.(2011). Valuing Recreational and Conservational benefits of a Natural Tourist site: Case of Cherrapunjee. *Journal of Quantitative Economics*, 9(2).
- El-bekkey, M., Abedellatif, M.& Faïçal, B. (2013). An economic assessment of the Ramsar site of Massa (Morocco) with travel cost and contingent valuation methods. *African Journal of Environmental Science and Technology*, 7(6), 441-447. DOI: 10.5897/AJEST2013.1485
- Gossner, C. M. E., Schlundt, J., Ben Embarek, P., Hird, S., Lo-Fo-Wong, D., Beltran, J. J. O., ... & Tritscher, A. (2009). The melamine incident: implications for international food and feed safety. *Environmental health perspectives*, 117(12), 1803-1808.
- Garrod, G. & Willis, K. G. (1999). *Economic Valuation of the Environment: Methods and Case Studies*. Edward Elgar.
- Godden, B. (2004). Sample Size Formulas. *Journal of Statistics*, 3, 66.
- Hannon, B. (1994). Sense of place: geographic discounting by people, animals and plants. *Ecological Economics*, 10, 157-174.
- Khan, H. & Siddiqui, R. (2003). Economic Valuation of

- the Environment and the Travell Cost Approach: The Case of Ayubia National Park. *The Pakistan Development Review*. 42(2), 537-551.
- Iamtrakul, P., Teknomo, K., & Hokao, K. (2005). Public Park Valuation using Travel Cost Method. *Proceeding of the Eastern Asia Society for Transportation Studies*, 5, 1249- 1264.
- McConnell, K.E. (1992). On-site time in demand for recreation. *American Journal of Agricultural Economics*, 74, 918-925.
- Michelle, H., Loomis, J. B., & Bilmes, B. (2016). *Total Economic Valuation of the National Park Service Lands and Programs: Results of a Survey of the American Public* HKS Working Paper No. 16-024. <http://dx.doi.org/10.2139/ssrn.2821124>
- Nde, Timaha Paul(2011). *Non-market valuation of Beach Recreation using the Travel cost Method (TCM) in the context of the developing World: An Application to visitors of Ngoe Beach in Kribi, Cameroon*. Department of Economics, Swedish University of Agriculture Sciences.
- Pant, K.P., Rasul, G., Chhetri, N., Rai, K.R., & Sharma, E., (2012). *Value of Forest Ecosystem services: A quantitative estimation from the Kangchenjunga landscape in eastern Nepal*. International Centre for Integrated Mountain Development, ICIMOD Working Paper 2012/5.
- Park, C. & Song, H. (2018). Visitors' Perceived place value and the willingness to pay in an urban Lake Park, Department of Economics, Hankuk University of Foreign Studies, *International Journal of Environmental Research and Public Health*.
- Pearce, D., Atkinson, G., & Mourato, S. (2006). *Cost-benefit analysis and the environment: recent developments*. Organization for Economic Co-operation and Development.
- Pearce, D. & Moran, D. (1994). *The Economic Value of Biodiversity*. IUCN-The World Conservation Union
- Rasul, G., Chhetri, N., & Sharma, E. (2011). *Framework for Valuing Ecosystem service in the Himalayas*. International Centre for Integrated Mountain Development, Technical Report. Rosato, Paolo & De Francesco, E. (2000). *Individual Travel Cost Method and Flow Fixed Costs*. University of Trieste
- Roussel, S., Salles, J.M., & Tardieu, L. (2012). *Recreational Demand Analysis of the Sensitive Natural Areas*. University of Montpellier France.
- Salazar, S.D.S. & Menendez, L.G. (2005). *Estimating the Non-market Benefits of an Urban Park: Does Proximity Matters?*. Department of Applied Economics, University of Valencia.
- Shaw, D. (1988). On-site sample's regression: problems of non-negative integers, truncation and endogenous stratification. *Journal of Econometrics*, 37, 211-223.
- Shaw, D. & Rogers, J. (2005). *Review of non-market value estimation for festivals and events: A Discussion Paper*, Draft report submitted to the Ontario Tourism Board by Research Resolutions Ltd. Inc.
- Tikapur Municipality (2016). *Tikapur Municipality Profile*.
- Wang, D. (2015). *Rethinking planning for urban parks: Accessibility, use and behaviour* (Unpublished Doctoral thesis). The University of Queensland.
- Zella Adili Y, & Ngonyali Robert H (2016) Economic Valuation of Recreation Use Value of Kilimanjaro National Park. *Tanzania Journal of Ecosystem & Ecography*, 6(22). doi:10.4172/2157-7625.1000220